But much of this increase is the consequence of a greater diversification in agricultural activities with a view to reducing unemployment and under-employment among family labour and raising the family income. Poultry-keeping has, of late, become very popular with the rural families and it is unusual to find families in the rural areas which do not rear at least a few laying birds. Kerala produced 137 million eggs (hen eggs—114 million; duck eggs—23 million) in 1951, and ranked fifth among the States in egg production. Production of eggs is now much higher and may be around 200 million. Kerala is also the biggest exporter of eggs. These are sent as far as Punjab in the north, Calcutta in the east and Bombay in the west and even to foreign countries, mainly Ceylon.

Low Productivity of Livestock

3.5 On an average a cow yields 330 lbs. of milk per year, a buffalo 619 lbs. and a goat 40 lbs. These yield rates compare very unfavourably with those for other parts of India (Table 16).[1] The low productivity of animals is partly due to the poor inherent breed characteristics and partly due to the conditions under which they are reared. The cattle found in Kerala are all of a non-descript type. They are small in size and build. They are stunted in growth. Buffalo in Kerala weighs about half of its counterpart in U.P. or Punjab. The same is true of other livestock too.

3.6 The livestock, especially the bovines, are reared under unwholesome conditions. They are under-fed. The bulk of the ration consists of roughages, mostly rice straw, and is grossly deficient in proteins and other protective properties. The livestock feed available in Kerala is also highly deficient in some of the important bone-building minerals such as calcium and phosphates. This is a direct consequence of a high rainfall which has leached off most of these minerals from the root zones of soils. In the absence of adequate phosphatic and calcium soil amendments, the crops grown in such soils are poor in these minerals. Lack of minerals has a telling effect on the health, build and general condition of the livestock of Kerala. The small size and build are important causes responsible for their low milk yield and poor work output.

3.7 Nutritional deficiencies lead to a number of serious consequences. Poor health results in low vitality and resistance to diseases as well as a low rate of nutritional utilization from feeds. All these factors are responsible for a low level of efficiency and other hazards such as a high rate of mortality and a low rate of fertility. However, realizing the reasons for low productivity, many enlightened farmers have taken to scientific rearing of livestock and have started adding concentrates, such as waste grains, oil cakes and mineral mixtures to the cattle feed. Credit for this goes to the State's Animal Husbandry Department which has been making special efforts to educate the peasantry on the need for adding mineral mixtures to the livestock feed. The Department has been distributing mineral mixtures to farmers at subsidized rates in order to popularize them.

3.8 In view of the very poor quality of livestock in the State there is an urgent need for developing animal husbandry in Kerala. Although animal husbandry

[1] [Table 16, appearing on p. 282 of the text, has not been processed -- Analyst]

11: India G-4, 5 (1960-1961) 1962 AWll Kerala AWll

programmes do not create any significant increase in direct employment opportunities, although animal husbandry they do help in reducing the degree of unemployment situation within the family. Moreover, some of the animal husbandry activities such as piggery, poultry-rearing, and bee-keeping need little investment to start with and are quick to yield returns.

3.9 Development of animal husbandry on commercial lines by individual rural families may not be possible without adequate State action. Aid should be given for implementing measures of improvement with a view to increasing the efficiency and productivity of the livestock. The aid could be given int he form of easy loans, development of marketing and processing facilities, sale of feed and fodder at reasonable prices, etc. These are discussed in the subsequent paragraphs separately for cattle and other livestock.

CATTLE DEVELOPMENT

3.10 The output of milk from cattle and buffaloes as well as draught capacity can be improved through a scientific breeding programme and the prevention and control of diseases. As stated previously, cattle found in the State are of non-descript types. Unless they are imparted with high productivity genes, any amount of improvement in feeding and rearing will not be of much use beyond a particular stage. It is, therefore, necessary to concentrate on improving the breed of cattle and buffaloes. There are two ways of tackling this problem: (*i*) selective breeding and (*ii*) mass upgrading.

3.11 The former is not feasible, as there may not be enough cattle to start with if rigid norms are employed for selection. There will also be the problem of finding suitable means of disposal of the useless cattle. The practical solution under these circumstances would be to resort to a scheme of mass upgrading according to which the local bulls are to be replaced with bulls of some outside breed, suited to local needs and conditions. To be really effective, the upgrading programme should be made to cover the entire State and should stretch over a span of at least four decades. During this period, no bulls, other than the approved ones, should be allowed to sire.

3.12 The value of the upgrading programme was realized in Kerala a few decades ago. The scheme was introduced on a large scale during the First Plan by starting five Key Village Schemes. The number was raised to 14 in the Second Plan. It is estimated that by 1965-66, it would be possible to cover about a quarter of the eligible milch cattle under the Key Village and Artificial Insemination Schemes. But even though the programme is well conceived and implemented, the NCAER team was left with the impression that the scheme had not made any significant impact in the improvement of cattle and buffalo breeds in the State. Apart from the inadequate coverage of the programme, non-elimination of the local or scrub bulls is a serious problem. For success and effectiveness of the upgrading programme, it is, therefore, necessary, first, to implement the programme intensively all over the State and secondly, competition from the local bulls should also be eliminated by compulsorily castrating all the males before they reach the fourth year of their life. These suggestions may be implemented during the Third Plan.

11: India G-4, 5 (1960-1961) 1962 AWII Kerala AWII

3.13 The Sindhi bulls which have been selected for the upgrading work in Kerala are scarce these days, and it may be difficult to procure the required number for the proposed programme. The number of bulls needed would, however, be much smaller under artificial insemination than under natural service. The former programme should, therefore, be preferred to the latter. As the State is well served with roads and has a good and efficient transport system, three or four central semen collecting centres would be needed to cover the entire State provided the product is quickly dispatched and properly stored while in transit. The centres may be located at Trivandrum, Trichur, Calicut and Palghat. Bulls should be provided for natural service in remote and out of the way places. The proposed breeding programme would need buildings, equipment and livestock for artificial insemination centres. These programmes would require an investment of Rs. 8.76 lakhs over the Third and Fourth Plan periods.

Prevention and Control of Diseases

3.14 Prevention of diseases peculiar to livestock and a machinery for their control is a pre-requisite for proper development of animal husbandry. Under the present circumstances, where there is a heavy incidence of disease and high mortality rates, any enterprise in the field of animal husbandry is fraught with high risks ; and farmers are hesitant to hazard investment on any animal husbandry business. The major share of burden will naturally have to be borne by the Government.

3.15 For effective prevention and control of diseases, it is necessary to have an adequate number of well-staffed veterinary dispensaries and hospitals. These institutions should, as far as possible, render free treatment. Under the conditions prevailing in Kerala, it is considered necessary to have at least two veterinary hospitals in every taluk and one dispensary or first-aid clinic in every Panchayat. Measured by this norm, the existing facilities are utterly inadequate. While there are 55 taluks and 892 Panchayats in Kerala, the total number of hospitals and dispensaries,[1] at the end of 1958-59 were only 45 and 69 respectively. (Table 21)[2]

3.16 Two factors are responsible for this situation : (*i*) shortage of personnel and (*ii*) paucity of funds. With the opening of the veterinary college at Trichur, the situation may be expected to improve with regard to the personnel, provided adequate funds are made available. The State should try to achieve the above norms by the end of the Fourth Plan. Investment on the proposed 20 additional hospitals and 723 dispensaries would be about Rs. 77.3 lakhs.

POULTRY DEVELOPMENT

3.17 Though Kerala has the best developed commercial poultry industry in the country, conditions under which the birds are reared are far from satisfactory. The birds are not adequately fed, and consequently they resort to scavenging. A good

[1] Includes Stockman's stations and Inspector's stations.

[2] In 1960 the numbers were 63 and 133 respectively.

11: India G-4, 5 (1960-1961) 1962 AW11 Kerala AW11

TABLE 20

CATTLE AND BUFFALOES IN KERALA (CATEGORIES) 1956

231

Categories	Cattle (in '000 numbers)	Buffaloes (in '000 numbers)	Total (in '000 numbers)
1. Males over 3 years	820	279	899
(i) Breeding	11	4	15
(ii) Working	571	268	839
(iii) Others	38	7	45
2. Females over 3 years	1003	142	1044
(i) Breeding			
(a) In milk	398	63	461
(b) Dry and not calves	577	65	642
(ii) Working	8	11	19
(iii) Miscellaneous	19	3	22
3. Young stock	914	94	1008
TOTAL	2536	315	2851

SOURCE: *Indian Livestock Statistics, 1953-54 to 1955-56*, Ministry of Food and Agriculture.

[113]

TABLE 21

NUMBER OF VETERINARY INSTITUTIONS IN KERALA STATE (1958-59)

232
634

District	Hospitals	Dispensaries	Stockman's stations	Inspectors' stations
Trivandrum	5	3	..	..
Quilon	5	7	..	..
Alleppey	6	5	..	..
Kottayam	5	4	..	..
Ernakulam	9	12	..	..
Trichur	7	13	4	..
Palghat	5	8	..	8
Kozhikode	2	10	..	..
Cannanore	1	7	..	3
TOTAL	45	69	4	11

SOURCE: Director of Animal Husbandry, Trivandrum.

351 useful for cookery are watered and grown in the compound itself; while during the rains also vegetables are grown, such as brinjals, lady's fingers, pumpkins, peas, etc. During summer the trees and vegetables in the compound are watered from the well which is a special feature of every house.

242 *Insect-pests.*—The *caterpillars* of certain moths ate away this year (1916) the tender blades of the paddy as soon as they cropped up from underground. This appeared at the beginning of the sowing season (May) and lasted for a week or two. Farmers here say that these have not appeared for years past. When I wrote to the Agricultural Superintendent of the State at Trichur he suggested the following remedy: "Dig a trench ½ foot wide by 1½ feet deep along the four sides of a field where these insects would fall in their travel from field to field, but would not be able to get out of it."

A kind of fly or flea is said to eat away the juice of the rice at the stalk of the paddy as soon as it reaches the milk stage.

232 *Cattle diseases.*—Sore feet. The feet are well washed with hot water, and turpentine, teak-oil, or cashewnut oil is smeared in the sore; the animal is also made to stand in a muddy place into which the leaves of a certain tree are strewn.

Mouth disease. Pig-ghee or bear-ghee is smeared on the tongue.

Swelling in the belly. The animal without any apparent cause falls down and dies. No medicine is applied in such cases.

Malignant sore-throat and cow-pox are also common.

[654] An Agricultural Department for the State has been established recently at Trichur with a model farm attached to it. The present Superintendent is an England-returned Cochinite. Help is often derived from here, but the farmers themselves are shrewd in practical agriculture.

313 *Timber.*—Wood for fuel, implements, buildings, etc., is obtained from the neighbouring hills and forests. The taluk of Talapilli is full of forests especially on the eastern side. Nearly 43 per cent of the area of the State is forest and its timber is even exported to foreign parts. The Forest Department is a source of income to the State.

[482] Coolies carry faggots of fuel on their heads from the neigh-
[435] bouring hills for sale; sometimes the people get cart-loads; a decent head-load now costs nearly 4 annas and a cart-load from Rs. 2-8-0 to Rs. 3; prices were much lower a few years back. A full head-load is divided into smaller bundles before being sold, and a woman may get six or eight annas for a bundle as heavy as she can carry.

Durable building materials are got from the forests and timber depots, but mango-planks, bamboos and jack-tree planks are also used.

342 *Houses.*—Houses are not built in rows. Every house is surrounded by a compound hedged round by bamboo. Such compounds are intersected by lanes. Rice-straw is used in thatching houses; tiles are replacing thatch but the majority of houses still are thatched. No terraced houses can be seen in these parts where the monsoon rains pour down with full force.

31: Slater S-5 (1916-1917) 1918 AW1 India
Kerala AW11

use. No other manure is used. Green manure is not grown but is got from somewhere or other according to circumstances. Varatties are not made. Wood fuel is the only sort used. 241 [372]

Insect pests.—Of these, the most ruinous is the "Chazhi" the terror of the ryot. The chazhi is a small insect of the locust species half an inch long which in millions appear in a few seasons and spread desolation in the paddy fields. Two remedies are current against this pestilence: (1) catching them directly by drawing a cloth (which serves the purpose of a net) attached to two handsticks over the crops and thus killing them; (2) but by far the most efficacious remedy in the estimation of the cultivator is the putting of a talisman in the fields which a local conjurer (Mandravadi) has prepared for him. What chazhi is to paddy "Mahali" is to the arecanut, the only difference being that in this case nothing is believed to be possible to combat the calamity. 242 [789]

Cattle diseases are (1) hoof disease, (2) Koraladappan (swelling in the neck), (3) Thada (mumps), (4) obstruction of urine and dung, (5) sudden epileptic attacks, and other diseases whose causes and cure are unknown to the peasant. Poisoning is sometimes done by Paraiyas of neighbouring desams for the sake of getting the flesh. For beef is eaten only by this lowest class and when cattle die they will be called to remove the carcase. A number of cattle are annually destroyed by tigers also which often venture into the sheds of the peasants. Talismans and offerings to deities are conceived to be the only remedy. 232 ● [789]

No assistance is obtained from the Agricultural department, nor any from any veterinary doctor.

Wood is commonly got for all uses from private trees; but the forest also supplies sometimes wood for small necessities. For building purposes, wood is purchased—not from any fixed place. 313

Houses.—The depressed castes have miserable hovels for their houses. A mud wall of five feet height with a ruined roof which can protect the inmate neither from sun nor rain is the order of the day. 342

Except the palatial family homes of the two jenmis, there are no tiled houses. Terracing is not customary here. All other houses are thatched, and thatching is always of straw.

Most houses have gardens surrounding them, where arecanut trees, plantains, mango trees, jack, etc., are grown. They are joyful to look at. 351

The maximum distance of cultivated lands from the home of cultivator is one mile.

An acre of land costs from Rs. 200 to Rs. 300. But purchases on jenmi tenure are worth above Rs. 500. But it is impossible to acquire jenmam property except for jenmis; for the jenmis are jealous guardians of their lands and never sell lands once acquired. Direct threatenings and indirect intimidation are used by them to obtain the jenmam right of lands if held by any lesser landowner. 423 [435]

Subsidiary industries.—Neither weaving nor spinning have ever been practised in this desam. 463

Other crafts—

1. Arrack and jaggery making.
2. Ironsmith.

31: Slater S-5 (1916-1917) 1918 AWI India
Kerala AWII

237 (called varatties) and used as fuel to supplement firewood, by the poorer classes, who go about picking the stray deposits of cattle-dung in the by-ways and streets. Perhaps a small percentage of cattle-dung is wasted. Yet it is the most important manure and an acre of land uses 100 to 150 baskets of it.

Cattle urine is not used, except by Brahman ladies to a very small extent, in growing kitchen vegetables in their backyards.

The refuse of goat-pens and of fowls (which are kept in most low-class and Nayar houses), as well as bone dust, is used in small quantities for growing garden vegetables.

241 All sorts of green manure are used. About fifty to seventy-five bales of green stuff are used on one acre of land. But green manure is not grown; it is obtained from the neighbouring woods, and the shrubby undergrowth which is commonly found on almost every hillside and in the compounds of houses.

Wood-ash is commonly used, especially in garden cultivation.

Salt is used in coconut plantations.

Chemical manures are unknown in the village.

Garden cultivation is an important item, and very profitable too, though it is not yet carried on very extensively. About 110 acres of land are used for this purpose. Water is obtained mostly from wells, of which there is one or more in every garden. The chief products are coconuts (selling at Rs. 3 to Rs. 5 per 100), arecanuts used for chewing, etc. (Rs. 1½ to Rs. 2 per 1,000), plantains or bananas (Rs. 5 to Rs. 15 per 1,000), jack-fruits (2 to 6 annas each), mangoes, yams and various kitchen vegetables like pumpkins, brinjals, etc. These are cultivated in almost all gardens. Pepper and ginger, betel leaves and turmeric, are also cultivated in all good gardens. Pepper is very valuable and gives a good profit.

[722] Coconuts being largely exported in the form of copra, have fallen 50 per cent in price, through shortage of freight, during the war. This has entailed great hardship on the large classes of coconut growers and workers in the Malabar Coast, this village suffering with the rest.

242 *Insect-pests.*—A kind of beetle sometimes does great damage to the crops—especially the new paddy crops and plantains. Small birds also carry away grains of corn. The usual method of combating them is to keep watch in the fields and drive them off—a very tedious and difficult operation. No help is got from the Agricultural Department, of whose very existence the village is unaware.

232 *Cattle diseases.*—Hoof disease is the commonest and most dangerous. Kerosene oil mixed with lamp black is the popular remedy. There is another disease—a sort of suffocation. A cholera-like disease is also heard of, accompanied by bleeding, etc. Snake-poisoning is another danger, a bite on the nose being supposed to be fatal. The villagers have their traditional methods of combating these. Charms and incantations are used to supplement medicine. No assistance is obtained from the Agricultural Department.

313 *Wood* is obtained from the neighbouring forests, as well as from the clusters of trees in the village. Building timber is often